



Department of Energy

ROCKY FLATS PROJECT OFFICE
12101 AIRPORT WAY, UNIT A
BROOMFIELD, COLORADO 80021-2583

SEP 21 2005

05-DOE-00565

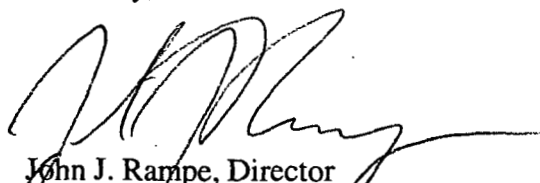
Mr. Carl Spreng
Rocky Flats Cleanup Agreement Project Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Dear Mr. Spreng:

Please find enclosed the additional information requested by Mr. David Kruchek, Colorado Department of Public Health and Environment, for the Building 776/777 Closure Project, a Type 3 Facility. Also included is Revision 1 to the Final Decommissioning Closeout Report for the Building 776/777 Closure Project with a color copy of Figure 4 and Appendix B. No other figures or appendices are included as they did not change from the original submittal.

Questions may be directed to Rich Schassburger, Rocky Flats Project Office, at (303) 966-4888.

Sincerely,



John J. Rampe, Director
RFPO Project Management

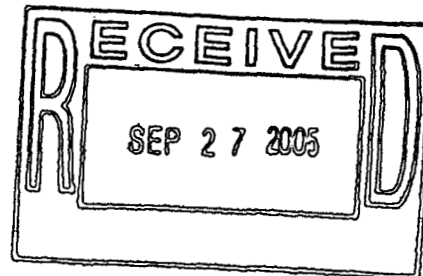
Enclosure

cc w/o Encl.:

S. Nesta, K-H, RISS Env
J. Heber, K-H RISS D&D
K. Wiemelt, K-H RISS D&D

cc w/Encl.:

D. Kruchek, CDPHE
M. Aguilar, USEPA
D. Abelson, RFCLOG
K. Korkia, RFCAB
Administrative Record



ADMIN RECORD
B776-A-000304

1/49

SUMMARY OF B776/777 RESPONSE TO COMMENTS TO CDPHE

- 1) Section 1.3 - This section should be modified to properly state what actions were performed and the results of those actions. Sub-sections 1 & 2 should include discussions of the air sampling and results as well as "Kray's Pans", and the construction of the berm around B776/777 to prevent surface water runoff. Sub-section 3 should discuss results of PAM samplers as well as the close-in sampling performed by the site as well as EPA. Sub-sections 5 & 6 should be modified to properly describe the building removal actions that occurred. Were all slabs completely removed, or just B776/777? B730 slab/bottom of tanks remains and was not completely removed. All contaminated soil was not removed! Some contaminated soil remains at depth, both rads and chemical associated with B730 and 776/777.

Response:

In Section 1.3.1 and 1.3.2 a comment will be inserted to reference 2.5.1 Air Sampling During Demolition. Additionally, the following paragraphs will be added to 2.5.1 to address the "Kray's pans" and the EPA close-in sampling that was conducted.

- The 776 project did 10 air samples & 10 deposition pans that were surveyed every 2 hours when the project was working. Four air samplers ran 24 hours a day 7 days a week. No deposition pan was ever above 20 DPM. Only a few air samples were above the MDA, and none were above the action level, with the highest reading being 0.18 D.A.C.
- EPA operated four high volume air samplers for close-in monitoring around the B776/777 demolition area. Filters were recovered and analyzed on a weekly basis for Pu-239. All field samples were well below action level of 0.05pCi/m³. Data provided to the Site by EPA.

Section 1.3.5 will be modified as follows:

- All structures, except for two-thirds of the 730 slab were removed to at least three feet below grade. The building 776/777-floor slab was completely removed, as well as all process waste piping below the slab. All basement areas and buried equipment pits were completely removed. The two underground diesel storage tanks on the north side of 776 were completely removed (USTs No. 22 and 23). The four Building 730 underground concrete tanks were also completely removed. See Section 2.5 and ER Closeout Reports for IHSS Group 700-3 Volume I, May 2005, and Volume II, which will address UBCs 776, 777, and 778, and OPWL Tank 118, for additional information on structures remaining.

Section 1.3.5 will be modified as follows:

- All building structures and slabs were completely removed, except as note above. Contaminated soil remaining is addressed in ER Closeout Reports for IHSS Group 700-3 Volume I, May 2005, and Volume II, which will address UBCs 776, 777, and 778, and OPWL Tank 118. The site will be regraded using clean fill. Long-term stewardship goals for use as a wildlife refuge will be met.

- 2) Section 2.5 - Please modify the discussion to specifically identify the portions of buildings removed. That is, please indicate if the whole building/slab/footers/etc. were removed or not, and what remains. This discussion currently indicates that all of the buildings were removed yet other sections of this Report suggest the some of the slabs and below grade structures remain, please be precise as to what was removed and what remains.

Response:

Other than two-thirds of the 730 slab, all structures were removed. The 730 slab is discussed in the ER Closeout Reports, since ER conducted this action.

- 3) Section 2.5.1 - Please add to this that EPA also set up close-in air samplers for B776/777 and performed air sampling for radiological concerns. The analytical results for all of which have yet to be received. However, those results that have been provided have not identified radiological contamination above levels of concern. As an added step "Kray's Pans" were sampled to identify levels of "fallout" around B776/777.

Response:

As stated in item 1 above, this section has been modified to address these items.

- 4) Section 5.0 - Please modify this section to properly describe and show the remaining infrastructure and the condition of remaining utilities and lines. This would include condition (removal and/or how plugged/grouted) of storm lines and drains, sewer lines, OPWLs, NPWLs, foundation drains, etc. specifically associated with the demolition activities. Also the location of the tunnel that was plugged, and all remaining structural elements. In addition please provide appropriate figures.

Response:

Please see Figure 4 and Figure 5, which show the location and condition of the questioned lines. All remaining lines were plugged or grouted in accordance with approved work packages. The tunnel and all remaining structural elements (such as the portion of B730 slab) are addressed in ER Closeout Reports for IHSS Group 700-3 Volume I, May 2005, and Volume II, which will address UBCs 776, 777, and 778, and OPWL Tank 118.

- a) Please modify to recognize that the floor slab of the B730 tanks was not removed and remains in place.
 - b) Please include buildings 712A and 713A in these discussions regarding the demolition and remaining infrastructure. Was all of the below ground concrete structure removed for B712A and 713A?
 - c) 1st paragraph - Please change the references to Figure 7, as this figure does not appear to show the final configuration of this area as discussed. Please provide a figure that does identify any remaining building structures (slab, footers, foundation, walls, etc).
 - d) Please modify the discussion in the 1st and 4th paragraph to agree. Have all of the building structures been removed or not?
 - e) Since it is our understanding that all of B776/777 was removed and no structures remain for B776/777, nor does figure 6 provide any utility isolations or depths of utilities, please remove Figure 6 or explain what it is trying to show. In addition please provide appropriate information for the discussion provided and a figure that shows all of the facilities included in this report.
 - f) 4th paragraph - a) Since Figure 7 does not appear to show the remaining building foundations, please identify the correct figure or provide one.
- b) Since there is no Figure 8 provided either provide one or correct this reference.

Response:

Section 5 will be modified as follows:

All buildings in the 776/777 Closure Project were removed to at least three feet below final grade. Removal to this depth included removal of all building floor slabs. Building 776/777, 701, 702, 703, 710, 712, 712A, 713, 713A and 781 structures were removed, including all slabs, basements, footers, and foundations.

Underground process waste lines beneath the Building 776/777 slab were completely removed. Removed and remaining original process waste lines outside the building footprint are shown on Figure 54, along with storm drains, sewer and water lines, and foundation drains.

Underground utility lines (e.g., alarms, electrical, natural gas, nitrogen, water, etc.) were removed to at least three feet below final grade beneath the building footprints. Utilities outside the building footprints were air gapped, plugged, or otherwise isolated. Figure 6 5 shows the Building 776/777 Project Utility Isolations and depths below the surface. These depths relate to the existing ground surface at the time of isolation.

The only remaining building structures within the 776/777 Closure Project are were some footers and foundations below three feet of final grade associated with buildings 701, 702, 703, 710, 712, 713, and 781 776/777, and the slab of 730, which were turned over to ER and are addressed

SUMMARY OF B776/777 RESPONSE TO COMMENTS TO CDPHE

in the ER closeout reports. Final site contouring in this sector had not been completed at the time this report was prepared. However, final grading will be as shown on Figure 87.

Environmental Restoration activities conducted outside the scope of the 776/777 Closure Project DOP (e.g., under the ER RSOP) are summarized in a separate ER closeout report (Closeout Report for IHSS Group 700-3, Volume I, dated May 2005. Volume II will address UBCs 776, 777 and 778, and OPWL Tank 18).

- 4) Please properly account for all of the Figures provided. Currently there is no Figure 2 or 3 identified in this Report.

Response:

Figure 2 and 3 are in the body of the report (pages 15 and 16 respectively); however they do not have figure numbers as they were generated by other organizations for other purposes than this report. Figure 6 will be deleted as it is not valid. Figure 7 will remain the same.

- 5) Figure 4 - What is the difference between demolished structure and removed? This figure should show the outline of the former structures and the location of remaining building structures. In addition this figure and Fig 5 do not appear to agree as to the remaining and removed utilities. Please modify this figure to provide the correct information needed or provide another figure that provides this information.

Response:

On Figure 4 there should be no distinction between "demolished structure" and "removed." All structures were demolished and removed, except as previously noted. This figure was being used to show the status of the OPWL, sewer, water and storm drain lines.

- 7) Figure 5 - This figure does not address the final configuration of the storm drains shown (need to provide a legend for storm drains), nor does it show any foundation drains (although not aware of any foundation drains associated with B776/777) as discussed in this document (2nd paragraph Section 5).

Response:

The status of storm drains are shown on Figure 4.

Comments B776/777 DD Closeout Report, Appendix B

RCRA Unit 61, Page B-1: If possible, provide an exact closure date for use in EPA's RCRA Info tracking system. (Closures where only a month is available should be shown as the last day, or last working day, of the month for entry into RCRA Info by CDPHE.)

Response: The Closure Date in the Master List has been changed from 5/1/04 to 5/31/04 because no exact date could be determined in May 04.

RCRA Unit 94.007 and 94.008, Page B-3: If possible, provide an exact closure date of the tanks for use in EPA's RCRA Info tracking system.

Response: Tank II shows the tanks were removed on 3/15/01. That date will be reflected in both Appendix B and the Master List.

RCRA Unit 776.3 (1st entry), Page B-4: If possible, provide an exact closure date for use in EPA's RCRA Info tracking system.

SUMMARY OF B776/777 RESPONSE TO COMMENTS TO CDPHE

Response: The Closure Date in the Master List for the GB has been changed from 10/02 and 12/02 to 10/31/02 and 12/31/02 because no exact date in October and December could be determined. The Closure Date in the Master List for the floor has been changed from March 03 to 3/31/03 because no exact date could be determined in March.

RCRA Unit 776.3 (2nd entry), Page B-4: The Closure Info column entry indicates that mercury amalgamation will be conducted in the ASRF and, further, that the ASRF has been closed by debris cleaning. A review of the Unit 881.3B entry in the RCRA Master List does not include the unit in B776 nor describe its closure. Closure documentation/dates are needed. The report of "debris cleaning" indicates that a building log may provide the details and a closure date and would be preferable to referencing the Building DOP approval date. Please address. (Also, if correct, please show the closure date of 3/1/03 shown on the Master List.)

Response: Line 739 addresses the use Mercury Amalgamation under 881.3B in the ASRF and therefore no changes except the closing date was change to 3/31/03 because exact date could be determined in March 03

776.3	776	Mercury Amalgamation under 881.3B	No longer subject to RCRA regulation	One time; 10/17/02 Contact Record btw C. Hicks and James Hindman that TRM mercury amalgamation will be conducted in the ASRF under procedure 00-707/776-009. ASRF has been closed by debris cleaning.	Mar-03	3/31/03	776/777	N
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RCRA Unit S002, Page B-4: The RCRA Master List indicates closure of the unit was on 9/1/03, not merely Sep-03. The specific date suggests that a building log may provide the details and a closure date or reference a CR. If sufficient details are available a CR may be created to memorialize the unit's closure. Please address. (Also, if correct, please show the closure date of 9/1/03 shown on the Master List.)

Response: The Closure Date in the Master List has been changed to 9/30/03 from 9/1/03 because no exact date in Sept. 2003 could be determined.

RCRA Unit 90.49, Page B-5: In the Closure Info column, please include a reference to DOP Mod 9, dated 10/1/02.

Response: A reference to the DOP Mod has been included in the Appendix B

RCRA Unit 95.005, Page B-6: Unit 95.005 is shown as New Tank 1106, Rm 131, rather than 1105 Rm 131, on the RCRA Master List. Please determine which is correct then correct the Appendix or the Master List.

Response: The Master List is correct. It is New Tank 1105 and Appendix B has been changed.

RCRA Unit 95.016, Page B-7: The description, "piping closed by removal" and date of 7/2/2002, are not included on the RCRA Master List. Apparently, the ML is incomplete and should be modified.

Response: Piping removal has been included in the Master List.

RCRA Unit 95.019, Page B-8: The Master List entry shows a closure date of 8/1/05, please show the exact date if correct.

SUMMARY OF B776/777 RESPONSE TO COMMENTS TO CDPHE

Response: The Closure Date in the Master List has been changed to 8/31/02 from 8/1/02 because no exact date in Aug. 02 could be determined.

RCRA Unit 777.1 (2nd entry), Page B-8: Row 577 of the RCRA Master List shows a closure date of 4/2/04 with closure of the containment on 11/15/04. It also show a CR date of 11/15/04, versus the 11/24/04 dates shown in Appendix B. Please determine which is correct then correct the Appendix or the Master List.

Response: For Unit 771.1 Rm. 208 Area 10 the CR date is 11/15/04. Unit 776.1 Rm. 208 the CR date is 11/24/04. Therefore Appendix B has been changed.

RCRA Unit 777.1 (7th entry), Page B-8: Line 582 of the Master List is missing information shown in the Unit Description, Regulatory Status and Closure Info columns. Please check the actual Master List, electronic transfer to CDPHE may have resulted in lost data.

Response: Below is line 582. Therefore no changes.

777.1	777	Container Storage, Rm. 432C (17)	No longer subject to RCRA regulation	CLOSED under debris rule 12/17/03 (stainless steel floor). CDPHE approval in CR 6/24/04	12/17/03	12/17/03	776/777	N
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RCRA Unit N/A (1st and 2nd entries), Page B-10: If possible, provide exact closure dates for use in EPA's RCRAInfo tracking system.

Response: The Closure Date in the Master List for Tank V-543 in Rm. 452 has been changed from 01/2002 to 1/31/02 because no exact date in Jan 02 could be determined. The Closure Date for Tank V-605 in Rm. 131 has been changed from 7/02 to 7/31/02 because no exact date in Jul 02 could be determined.

**ROCKY FLATS ENVIRONMENTAL
TECHNOLOGY SITE**

**Decommissioning
Closeout Report
for the
776/777 Closure Project**

Revision 1

September 5, 2005

Reviewed for Classification

Name:

[Signature]

Date:

9/7/05

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Appendix A. Administrative Record Index for the 776/777 Closure Project

Appendix B. RCRA Unit Closure Summary

Appendix C. Contact Records

1.0 Introduction

In accordance with the Building 776/777 Closure Project Decommissioning Operations Plan (DOP), a closeout report is required upon completion of decommissioning activities. In accordance with the Building 776/777 DOP, Section 4.18.4, this closeout report will consist of a brief description of the work completed, including:

- Verification that remedial action goals have been met;
- Remedial action description;
- Dates and duration of specific activities;
- Any modifications to the original DOP;
- Final sampling and analysis reports;
- A description of the quantity and characteristics of the wastes generated and how the wastes were stored or disposed;
- Site reclamation; and
- Demarcation of wastes left in place.

The Building 776/777 Closure Project comprises Building 776/777 and various support facilities located within the Site's Industrial Area. The DOP identified Building 776/777 as a Type 3 facility; Building 730 as a Type 2 facility; and Buildings 701, 702, 703, 710, 712, 712A, 713, 713A, and 781 as Type 1 facilities. Building 701 was re-characterized to a Type 2 facility as a result of the pre-demolition survey process as documented in Minor Modification #11 to the Building 776/777 DOP. This closeout report addresses all facilities within the Building 776/777 Closure Project. Figure 1 provides a map showing the locations of the Building 776/777 Project facilities.

Documentation that was submitted as part of this project, such as Pre-Demolition Survey Reports (PDSRs), will not be included in this report; instead, references to these documents are provided and a copy of the Administrative Record (AR) index for this project is included in Appendix A of this report. When completed and approved by DOE and the Lead Regulatory Agency (LRA), this Decommissioning Closeout Report will be submitted to the 776/777 Closure Project Administrative Record Post-decisional File.

1.1 Building Descriptions

Building 776/777 (Type 3) was a two-story structure with a partial basement and common wall separating Buildings 776 and 777. A tunnel located at the northwest corner of Building 776 connected to Building 771, an above-ground crossover on the east side of Building 777 connected to Building 779, and two hallways on the south side of Building 776 connected to Building 778.

The total floor area of both buildings was 224,600 ft²; this includes ten additions to the building that occurred since construction. The original Building 776/777 was constructed in 1955; the

Figure 1 Building 776/777 Closure Project Facilities

building additions were constructed from 1961 to 1969. In addition, a second roof was added to cover the majority of the original roof after a major fire in 1969. The foundations for the Building 776/777 structure consisted of reinforced concrete. There were individual spread footings with concrete pedestals, and reinforced concrete grade beams. The structure was framed with steel columns supported by concrete pedestals, except for x-ray and betatron vaults, which had reinforced walls 1.5 ft. to 7.5 ft. thick adjacent to existing walls.

The original portion of Building 776/777 had bare corrugated cement asbestos (transite), steel, or epoxy painted concrete block exterior walls. Various additions to the structure had 8-inch thick concrete block walls, while others had galvanized steel wall panels.

Building 701 (Type 2) was originally a carpenter and paint shop, then was a research laboratory, and finally was used for storage and office space. It was a single story building of 5,170 square feet. It had structural steel framing and galvanized steel siding and roofing. The interior was partitioned with concrete block walls. It was built on a reinforced concrete foundation and slab. The building was constructed in the early 1960's.

Building 702 (Type 1) contained the pumps that served the Building 712 cooling tower. The building was 870 square feet, and had structural steel framing and galvanized steel siding and roofing. It was built on a reinforced concrete foundation and slab. The building was constructed in the 1960-1961 time frame.

Building 703 (Type 1) contained the process cooling water pumps serving the Building 713 Cooling Tower. The building was 1080 square feet, and had structural steel wall and roof framing covered with galvanized steel siding and roofing. Reinforced concrete grade walls supported structural steel columns. The floor was a reinforced concrete slab on grade. The building was constructed in 1960-1961 time frame.

Building 710 (Type 1) was a steam reducing station. It was 352 square feet, and had a steel column frame and roof and galvanized sheet metal exterior. The floor was a reinforced concrete slab on grade. The building was constructed in the early 1980's. The building contained a steam reducing valve that reduced steam from the steam plant at 140 pounds per square inch (psi) to 125 psi for distribution to Buildings 771, 776, 777, and 779, and directed condensate from these buildings back to the steam plant.

Building 712 (Type 1) was a cooling tower that provided tower water for Buildings 776/777. The wood and fiberglass superstructure of the building was constructed on reinforced concrete pedestals on a reinforced concrete foundation. The interior of the foundation had a reinforced 12 inch thick concrete slab. The building was constructed in the 1961-1962 time frame.

Building 712A (Type 1) was a propane valve house. It was 90 square feet and was constructed of 3-inch angle frame with a galvanized sheet metal exterior. The foundation was reinforced concrete slab on grade. Building 712A was constructed in the 1961-1962 time frame. This building contained a propane pressure-reducing valve. The propane was originally used in Building 776/777, Room 150, and in Building 702.

Building 713 (Type 1) was a cooling tower. It had a wood superstructure and was supported by reinforced concrete pedestals on a reinforced concrete foundation. The interior of the foundation had a concrete slab on grade. The building was constructed in the 1961 - 1962 time frame.

Building 713A (Type 1) was a valve pit containing service valving for the Building 713 cooling tower. It was 250 square feet and had concrete walls with a 2 in x 6 in plank roof. Building 713A was constructed in the 1961 - 1962 time frame.

Building 730 Pit (Type 2) was a plenum deluge/process waste pit constructed of reinforced concrete, with a reinforced concrete stairway leading to the below-ground portion of the structure. Building 730 was constructed in the late 1950's. The stairwell lead down to a below-grade room containing pumps and piping. The floor of the pump room contained access hatches to four underground concrete tanks that were used for plenum deluge and process wastewater. Two of the tanks were filled with foam in 1996. The tanks were 25 feet below grade. Two tanks had capacities of 22,500 gallons each, and the other two held 4,500 gallons each.

Building 781 (Type 1) was a helium compressor house. It was 1,200 square feet with 1-foot thick concrete walls, floor and ceiling. The building was below grade except for the entrance. Building 781 was constructed in 1965. This building originally provided gas for testing in Building 777.

1.2 Building History

The Building 776/777 Cluster was constructed between 1955 and 1957. Beginning in 1958 and continuing through 1969, Building 776 was the main manufacturing facility for plutonium (Pu) weapons components and it housed a Pu foundry and fabrication operations. The main function of Building 777 was parts assembly. Following a major fire in Building 776/777 in 1969, the majority of the foundry and fabrication operations were transferred to Building 707. Although limited production operations were resumed in Building 776/777 when cleanup activities were completed, at that point, the main focus of the building was shifted to waste and residue handling, disassembly of retired weapons components, and special projects. Processes conducted in Building 776 included size reduction, advanced size reduction, pyrochemistry, coatings operations, and test runs of organic waste and combustibles in a fluidized bed incinerator (FBI). Building 777 operations included machining, product assembly and disassembly, testing and inspection of special weapons projects, and support operations, such as laboratories.

Building 776/777 contained an extensive glovebox network that supported various Pu production operations. Prior to the 1969 fire, the majority of the building space consisted of one large room. Subsequent to the fire, most gloveboxes were removed from Building 776 and the large room was compartmentalized into several areas separated by physical barriers to confine radioactive material releases. A negative pressure ventilation system was used to prevent areas of least contamination from becoming contaminated by areas of higher contamination. The building was equipped with a series of high efficiency particulate air (HEPA) filters to control air emissions to the environment.

On May 11, 1969, a major fire in Building 776/777 resulted in gross radiological contamination of Building 776/777 and portions of Buildings 771 and 779. The fire occurred in Room 134 in the north foundry line and propagated by way of the chainveyor system. The first floor operating areas of Buildings 776 and 777 were highly contaminated. The entire second floor of Building 776 was moderately contaminated from air-borne contamination through the floors and walls. The office areas in Building 776 were moderately contaminated from water-borne material, mainly on the floors. The roof of Building 776 was moderately contaminated in three areas. Two contaminated areas were localized around sanitary vent penetrations; the third, more extensive area extended from the exhaust duct to the edge of the roof.

After the fire, the major production operations in the building were reduced to machining operations on the south line in Building 776 and disassembly of retired weapons components and assembly operations in Building 777. In Building 776, the empty spaces resulting from the fire were converted to perform waste-related operations, focusing on waste reduction. Other operations conducted in the Cluster included Pu recovery operations in Building 776 and support operations, such as storage and laboratory work, in both buildings. These operations continued until production was curtailed at Rocky Flats in 1989.

1.3 Verification that Remedial Action Goals Were Achieved

Six demolition objectives were established for Building 776/777 in the Demolition Plan:

1. Protect the environment.

Decommissioning activities were completed within regulatory requirements. Environmental monitoring during demolition verified that no emissions above the action level were measured at the perimeter air monitoring stations (see Section 2.5.1 Air Sampling During Demolition). Contaminated soil will be remediated by ER in accordance with the ER RSOP and regulatory consultations prior to final grading of the project area.

2. Protect the public to the extent practical by maintaining emissions as low as reasonably achievable.

See above and Section 2.5.1 Air Sampling During Demolition.

3. Protect worker health and safety.

The 776/777 project completed D&D activities with an excellent safety record of less than 1% recordable injuries, that were typical construction type injuries, and less than 1% Lost Work Day Case rate. This excellent safety record was maintained throughout the demolition of 776/777. Demolition was completed without any recordable injuries.

4. Package the majority of the building as waste for disposal at off-site facilities.

Contaminated demolition rubble and soil was loaded into railcars and intermodal containers for disposal at off-site facilities. Non-contaminated building rubble from the Building 777 Annex was disposed off-site as sanitary waste, as were Type 1 buildings in the project area.

5. Remove building components to at least three feet below final grade.

All structures, except for two-thirds of the 730 slab were removed to at least three feet below final grade. The building 776/777 floor slab was completely removed, as was all process waste piping below the slab. All basement areas and buried equipment pits were completely removed. The two underground diesel storage tanks on the north side of 776 were completely removed (USTs No. 22 and 23). The four Building 730 underground concrete tanks were also completely removed. See Section 2.5 and ER Closeout Reports for IHSS Group 700-3 Volume I, May 2005, and Volume II, which will address UBCs 776, 777, and 778, and OPWL Tank 118, for additional information on structures remaining.

6. Accommodate future land-use as a national wildlife refuge.

All building structures and slabs were completely removed, except as noted above. Contaminated soil remaining is addressed in ER Closeout Reports for IHSS Group 700-3 Volume I, May 2005, and Volume II, which will address UBCs 776, 777, and 778, and OPWL Tank 118. The site will be regraded using clean fill. Long-term stewardship goals for use as a wildlife refuge will be met.

2.0 Project Description

Decommissioning activities were conducted in the 776/777 complex in accordance with the Building 776/777 DOP, which was approved by the Colorado Department of Public Health and Environment (CDPHE) on November 5, 1999.

The Building 776/777 Closure Project was divided into small groupings of similar equipment and rooms that could be worked independently. Initially a total of 83 groups, or Sets, were defined for the project. Set 84 was added prior to completion of the reconnaissance level characterization (RLC) to address the buried equipment pits. Results of the RLC were documented in the Building 776/777 Closure Project Reconnaissance Level Characterization Report (RLCR), dated August 28, 1998, which identified the presence of radiological and chemical contamination in many of the Sets.

Decommissioning activities included stripout of equipment and materials; decontamination and removal of 279 glovebox sections; removal of 40 RCRA-regulated tanks and 193 other tanks; and removal of ductwork, piping, conduit, and other mechanical and electrical systems.

The demolition plan for Building 776/777 was added to the DOP through a major modification in July 2003, as required in the original DOP approved in 1999. The approved demolition plan

for 776/777 was based on an ALARA-based decontamination effort, which involved decontaminating the facility to the extent practicable, considering worker safety as well as environmental protection. Due to the extensive contamination caused by the 1969 fire, it was not possible to decontaminate the facility to unrestricted release levels. The decontamination and demolition approach involved ALARA-based decontamination of the structure, removal of highly contaminated portions of the structure that were safe to remove, and application of fixatives to the remaining structure prior to commencing demolition.

The following subsections present more detail on the sequence of decommissioning activities, investigation of the buried equipment pits, decontamination efforts, Resource Conservation and Recovery Act (RCRA) closures, demolition activities, and project milestones.

2.1 Decommissioning Sequence

In general, Building 776/777 decommissioning proceeded as follows:

- Miscellaneous loose and fixed equipment and materials were removed from work areas.
- Electrical power to components was de-energized, locked out/tagged out, and disconnected. An extensive "cold and dark" power termination strategy was employed to minimize electrical hazards from decommissioning activities. Temporary power was run as necessary from supplemental transformers and power drops within the building.
- Tanks (interior and exterior) were drained, surveyed, and removed as waste. RCRA tank systems were closed in accordance with approved closure plans in the DOP.
- Internal equipment was removed from gloveboxes and they were decontaminated to the extent practicable. Lead was removed from glovebox exteriors.
- Gloveboxes were size reduced as necessary and removed as waste. Depending on contamination levels, containment tents were built as necessary for size reduction.
- After room areas were clear of gloveboxes and other equipment, mechanical and electrical systems were removed from the overhead areas.
- Glovebox ducting, zone I plenums and glovebox dry air systems were stripped out.
- Zone II and III plenums and ducting were surveyed and removed if contaminated above levels approved to leave for demolition.
- Asbestos containing materials were identified and removed by a qualified subcontractor.
- Hazardous substances were removed, including light bulbs/lamps, batteries, PCB light ballasts, mercury switches and thermometers, lead used in plumbing joints and roof flashings, etc.
- RCRA closures of secondary containment areas were completed in accordance with approved closure plans in the DOP.
- The building structure was decontaminated to the extent practicable using concrete shaving and hydrolasing.
- Contaminated non-load-bearing interior walls were removed.
- Portions of the contaminated original roof (false ceiling) were removed.
- Highly contaminated portions of the floor slab were removed.
- Final radiological surveys were conducted and documented in the PDSRs.

2.2 Buried Equipment Pits

Buried equipment pits (set 84) were investigated during 2002. The RLCR identified 12 areas where it was believed that equipment from the 1969 fire cleanup might be located in below-grade features filled with concrete. Interviews with employees involved with fire cleanup indicated that they believed contaminated equipment and fire cleanup tools had been encased in concrete in several pits. An exhaustive document search was conducted to find records from the fire cleanup period. Correspondence between Dow Chemical and the AEC indicated that Dow's contractor, Swinerton & Walberg, was directed to remove three pieces of equipment from the pits, and relocate the fourth (to B707). Investigation of the buried equipment areas confirmed the reports, except for a few metal pieces/base plates that were found, as indicated below.

- Area A included 5 filled-in stairwells under gloveboxes ("sheep dips"). Four of these were completely excavated with no equipment found, and the 5th (under the Advanced Size Reduction Facility [ASRF]) was cored and determined to contain only gravel.
- Area B, a suspect area in Room 127, was cored in six locations and no equipment was found.
- Area C, the 4-high rolling mill pit in Room 118, was cored in nine locations. Metal was found in two of these; one contained a metal plate embedded in the original slab, and one contained angle iron from the old sump.
- Area D, the Marform Press pit in room 134, was cored in 23 locations (3 inch cores) and the lower marform platen was found to be in the pit, with the base at a depth of approximately 22 feet. A three-foot diameter core was also drilled to reveal a cross section of the metal piece. During demolition, a second large metal piece from the press was also found in the pit that was not identified during coring. Both pieces were removed during demolition.
- Area E, the hydroform press pit in room 127, was believed to contain pencil tanks. Six cores were drilled, and no metal was found.
- Area F included two assembly equipment pits in Room 153. These pits were filled with gravel and capped with concrete. The concrete and gravel were entirely removed, and no equipment was found.
- Area G was a shallow washing machine drain pit in room 125. This trench was completely excavated, and no equipment was found.
- Area H was a small paint trap in room 133; this was also completely excavated and no equipment was found.

All concrete and metal associated with these buried equipment pits was completely excavated and removed during demolition.

2.3 Decontamination

In accordance with the approved demolition plan, which was approved in July 2003, an ALARA-based decontamination effort was conducted. The ALARA based decontamination effort was not based on a specific decontamination level, but on a process that included a combination of reasonable decontamination techniques, selective component removal, and fixation and/or encapsulation of remaining contamination. A project-specific emissions objective of 0.1 millirem project contribution was established for the Building 776/777 demolition. This level is

1% of the allowable emissions to the closest public receptor of 10 millirem per year established by the EPA. This project-specific emissions goal was used as an input to an air model to determine the extent of decontamination that would be required in order to achieve this goal. Based on the air modeling results, an average surface contamination value (ASCV) of 455 microcuries per square meter ($\mu\text{Ci}/\text{m}^2$) was established for the project in the *Building 776/777 Closure Project Radiological Characterization Plan* (see section 3.2.3 for approvals of this plan.) The ASCV was not used to make decisions with respect to decontamination and removals in the building; these decisions were made using the ALARA based work process outlined in the DOP Demolition Plan. The ASCV was an upper bound that indicated the maximum allowable contamination level. The building was decontaminated orders of magnitude below this level.

Following removal of all equipment and gloveboxes from Building 776/777, floors were surveyed, and the majority of the floors were decontaminated using a dry shaving technique. The rotary drum shavers were equipped with a vacuum system connected to HEPA filter units. This technique removed the paint and the top layer of concrete from the floors. Several passes were made with the shaver in some areas, depending on the thickness of paint and the residual contamination measured after the first pass. In Building 776/777, most of the first floor and parts of the second floor were decontaminated by shaving. Portions of the floor in Building 701 were also shaved.

The size reduction vault was decontaminated using hydrolasing, or high-pressure water jets, to remove paint and contamination. Water from the hydrolasing operations was collected in temporary tanks within the building and also in a temporary tank farm constructed on the north side of the facility. The water was sampled and dispositioned by the site Industrial Wastewater Program and the tanks and solids were packaged as waste.

Following shaving and hydrolasing activities, in-process radiological surveys indicated the presence of high contamination in many floor joints and cracks, and at column bases. Many of these contaminated areas were manually removed using jackhammers. Following months of decontamination efforts, many of the floor areas still had high residual contamination, and the decision was made to remove portions of the floor slab prior to building demolition. Floor slabs were removed from portions of rooms 118, 127, 134 west, 134 east, and 154.

Many contaminated non-load bearing interior walls were removed prior to demolition. Some highly contaminated portions were packaged in waste crates and shipped out of the building prior to demolition. Portions with lower contamination were left on the floor or used as backfill in the basement, for loadout during demolition. These walls were made of cinderblock, and demolition was conducted within the building prior to demolition to control dust emissions.

Following completion of decontamination and removal efforts, final surveys were completed in accordance with the project specific radiological characterization plan. The building was divided into 46 survey units. Survey data and decontamination/removal efforts were discussed with CDPHE, and following their approval, the areas were encapsulated with paint, except for a few office areas and portions of the second floor that had relatively low contamination.

A total of nineteen areas were identified that required additional or special controls during demolition. These areas had inaccessible surfaces, structural issues, or under slab conditions that impacted the remediation effort. These nineteen areas were identified with a distinctive color (orange or blue) to allow appropriate special handling and controls during demolition. The controls were contained in the Integrated Work Control Program (IWCP) demolition work package for Building 776/777.

Final radiological and non-radiological building characterizations were documented in the PDSRs and in a series of Contact Records that documented the pre-demolition condition of each of the survey units. Section 3.2.3 in this report details the project documentation for the pre-demolition characterization. DOE contracted an independent verification (IV) of the characterization data through the Oak Ridge Institute of Science and Education (ORISE). The ORISE characterization verified the building characterization was accurate; however, the final ORISE report had not been received as of the date of this Closeout Report. As summarized in the Final Pre-Demolition Survey Summary Report for Building 776/777, the final ASCV for the total building was 45,550 dpm/100 cm² (2.052 μ Ci/m²).

2.4 RCRA Closures

Building 776/777 contained 51 RCRA regulated tanks, 24 container storage units, and seven treatment units. Eleven of the tanks were closed prior to approval of the Building 776/777 DOP; the remaining 40 tanks and all container storage areas and treatment units were closed in accordance with the DOP. At the time the DOP was prepared, RCRA closure plans had not been finalized. Consequently, the closure plans were added to the DOP through a series of minor modifications. A summary of DOP modifications is provided in Section 3.1.

A summary of all RCRA closures for Building 776/777 is included in Appendix B. No other buildings in the Building 776/777 closure project contained regulated RCRA units. A portion of the process waste lines exiting Building 776 from permitted tanks in Unit 776.2 passed through Building 778 before connecting to Valve Vault 9. In addition, the reverse flow line from Building 771 passed through Buildings 776 and 778 to Valve Vault 9. These lines were closed under the Building 776/777 DOP, although Building 778 is in the Building 707 Closure Project. This was approved in the Unit-Specific closure plan for set 78 as part of DOP Modification #8.

The tanks and piping were all closed by removal and packaged for offsite disposal in accordance with the approved closure plans. The concrete floors that provided secondary containment for tanks, piping, container storage units, and treatment units were either clean-closed by administrative closure, or were washed and rinsed to meet clean closure by decontamination. The areas with stainless steel floors were washed to meet a clean debris surface. The concrete secondary containment areas that were washed and rinsed did not meet the closure performance standard; all areas had one or more metals that were above the Tier II action levels or the LDR standards, but were all below the characteristic hazardous waste levels. Based on negotiations with CDPHE, closure was approved for all areas contingent on disposing of all concrete as low level waste.

2.5 Demolition

Demolition within the 776/777 cluster began in December 2001 with removal of cooling towers 712 and 713, and associated buildings 702, 703, 712A, and 713A. These buildings all met the unrestricted release criteria prior to demolition and were removed as sanitary waste. Buildings 701 and 710 were demolished in September 2004. Building 710 met the unrestricted release criteria. Building 701 had contamination in and under a portion of the floor slab. Environmental Restoration (ER) completed removal of the floor slab and contaminated soil following removal of the building structure. ER also removed Building 730, in December 2004, and remediated the carbon tetrachloride plume (IHSS 118.1) which was co-located with the underground Building 730 tanks (Closeout Report for IHSS Group 700-3, Volume I, dated May 2005).

Demolition of Building 776/777 began in March 2005. The Building 777 Annex met unrestricted release criteria, and was demolished first. The annex had non-friable asbestos skim-coat on the cinderblock walls, requiring special controls and monitoring for this portion of demolition. The annex building debris was loaded out as sanitary waste. Building 781 also met unrestricted release criteria; however, due to its small waste volume and location below ground immediately adjacent to Building 777, it was removed as low level waste during Building 776/777 demolition.

Following removal of the 777 Annex, the demolition area around Buildings 776/777 was posted as a Contamination Area (CA). An earthen berm was constructed at the CA boundary to collect and contain all dust suppression water and precipitation that was collected. A lined retention basin was constructed at the east end of the CA to collect and recirculate the water. Following the completion of demolition, a mobile water treatment system was set up adjacent to the retention basin to treat the remaining demolition water. The water was discharged following sampling and analysis that demonstrated that the water met surface water discharge standards. This water treatment and discharge was conducted pursuant to the RSOP for the Consolidated Water Treatment Facility, Building 891. Following water treatment, the sludge remaining in the retention basin was solidified and loaded out in rail cars, along with the basin liner and pump house equipment.

The demolition phase of decommissioning included removal of the building shells, slabs, and foundations/footings. Demolition was performed by K-H. Demolition was conducted utilizing standard mechanical demolition equipment, including excavators, shears, processors, and front-end loaders. Concrete saws were used to cut the floor slabs. Dust control during demolition was provided by a combination of fog cannons and fire hoses, using fire hydrant water and/or recirculated retention basin water. Debris piles that were not loaded into waste containers within the day were sprayed with encapsulant to minimize dust.

Two diesel underground storage tanks on the north side of Building 776 (Tanks 22 and 23) were completely removed during demolition. Tank 22 was an old single-walled tank; soil sampling was conducted beneath the tank prior to backfilling to confirm the absence of contamination. Tank 23 was a tank in a concrete containment vault that had been filled with foam and closed in place in 1998. This tank was also completely removed.

Demolition of the above ground portion of Building 776/777 was completed on May 5, 2005. Work continued on excavation of floor slabs, basements, buried equipment pits, and underground process waste lines. Completion of the below-grade demolition/removal was completed on June 23, 2005 with the loadout of the two metal items from buried equipment pit D. After removal of the Building 776 elevator basement, the end of the underground tunnel leading to Building 771 was collapsed and sealed with concrete, then a bentonite plug was added prior to backfilling (see additional information in ER Closeout Reports for IHSS Group 700-3 Volume I, May 2005, and Volume II, which will address UBCs 776, 777, and 778, and OPWL Tank 118).

ER personnel sampled soil in the excavated areas daily, to determine if the soil met levels to leave in place or if it should be loaded out in waste containers with the demolition rubble. The top three feet of soil had an action level of 50 pCi/g, and the soil below three feet had an action level of 1 nCi/g. Although demolition and ER activities were conducted concurrently, ER activities are summarized in a separate completion report for UBC-776 (Closeout Report for IHSS Group 700-3, Volume II, UBCs 776, 777 and 778, and OPWL Tank 18).

2.5.1 Air Sampling During Demolition

Environmental air monitoring during demolition was performed in accordance with the requirements of the Site Integrated Monitoring Plan (IMP). The existing Radioactive Ambient Air Monitoring Program (RAAMP) sampler network was used for ambient air monitoring during removal activities. This network includes perimeter samplers as well as the site industrial area samplers for project-specific sampling. Project monitoring (PM-Rad) was carried out during demolition and removal activities using existing RAAMP samplers arrayed around the Site's Industrial Area. PM-Rad characterized the effects of potential short-term emissions from the project on ambient air quality and receptors closer to the project than the Site perimeter by quantifying gross alpha activity on filters. In accordance with the IMP, filters were collected weekly and screened for long-lived alpha contamination. The results were used to calculate the airborne concentration in units of activity per volume of air drawn through the filter (pCi/m³). These results were compared to two predefined Action Levels, corresponding to a 1.0 mrem dose rate and a 5.0 mrem dose rate at the sampling location, based on the assumption that the hypothetical receptor has been exposed for two weeks (one week of sample collection, one week for analysis).

PM-Rad monitoring was initiated in February 2005, one week prior to the start of 776/777 demolition. Results showed no emissions above the 1.0 mrem dose rate action level. Figure 2 graphically presents the monitoring data collected during this period, and Figure 3 shows the air sampler locations.

Figure 2 Industrial Area Air Monitoring During 776/777 Demolition

Figure 3 Industrial Area Performance Monitoring for Radionuclides Network

In addition to the site RAAMP samplers, the project conducted local workplace air monitoring using eleven air samplers in close proximity to the Building 776/777 demolition activities. The air filters were collected daily throughout the entire demolition timeframe, and were counted for alpha contamination. All samples were below the minimum detectable activity (MDA).

The 776 project did 10 air samples & 10 deposition pans that were surveyed every 2 hours when the project was working. Four air samplers ran 24 hours a day 7 days a week. No deposition pan was ever above 20 DPM. Only a few air samples were above the MDA, and none were above the action level, with the highest reading being 0.18 D.A.C.

EPA operated four high volume air samplers for close-in monitoring around the B776/777 demolition area. Filters were recovered and analyzed on a weekly basis for Pu-239. All field samples were well below action level of 0.05pCi/m³. Data provided to the Site by EPA.

2.6 Project Milestones

All work activities were conducted using the Integrated Work Control Program (IWCP). The following outlines the actual sequence of events and major milestones:

- November 5, 1999 – 776/777 DOP Revision 0 approved
- May 23, 2000 – Approval of DOP Modification #4 allowed management of hazardous remediation waste under CERCLA, rather than RCRA.
- August 9, 2000 – completed draining four mixed residue tanks to a physically empty status (T-344, T-345, T-360, T-370).
- October 11, 2000 – initial entries were made into the Size Reduction Vault (SRV) in supplied breathing air to clean out loose debris and verify RCRA stable status of three mixed residue tanks in the vault.
- December 2000 – Completed draining and raschig ring removal from the final three mixed residue tanks (SR-3, 4, and 5) and verified that the mixed residue tanks in the SRV were empty.
- August 29, 2001 – Contact record documents CDPHE permission to manage legacy gloveboxes (i.e. removed from service prior to approval of DOP) as remediation waste and permission to transfer remediation waste from Building 707 to Building 776/777 for size reduction.
- September 2001 - The Pre-Demolition Survey Report (PDSR) for the Type 1 outbuildings/cooling towers was approved by DOE and CDPHE. This includes buildings 702, 703, 712, 712A, 713, and 713A.
- December 2001 – completed demolition of the Type 1 outbuildings/cooling towers (702, 703, 712, 712A, 713, and 713A.)
- January 2002 - In-process radiological characterization was initiated on the first floor using gamma spec technology.
- April 30, 2002 - Downgraded the 776/777 limited area to a property protection area.
- May 2002 - A significant accomplishment was completion of set 51, Molten Salts, ahead of schedule.

- June 2, 2002 – CDPHE approved the extension of the Mixed Residue Consent Order Commitment date for B776/777 from December 31, 2002 to February 28, 2005.
- June 10, 2002 – Notification provided to CDPHE to cease effluent air sampling for all stacks and vents in B776/777 due to entering active decommissioning, per the site monitoring agreement.
- July 2002 - Set 78 (RCRA overhead piping) was completed in July. This set included the majority of the remaining mixed residue piping.
- August 2002 - The final mixed residue tank in B777 was removed and packaged. Tank DL-776 was previously located in Room 131, Set 4.
- September 2002 – Removed the pilot and production RCRA Fluidized Bed Incinerators (sets 61 and 63); the supercompactor (set 64), the Size Reduction Vault (set 60), a glovebox line in Room 131 (set 4), and the glovebox dry air system on the 2nd floor (set 72).
- December 2002 - The major accomplishment was the completion of set 84, buried equipment, which included characterization of below grade features filled with concrete or gravel where equipment from the 1969 fire was believed to be buried.
- December 2002 - Closed by removal two RCRA mixed residue tanks: T-344 and T-345, associated with the Advanced Size Reduction Facility (ASRF). These were the last two remaining mixed residue tanks in B776.
- July 1, 2003 – Major modification to DOP for demolition approved by CDPHE.
- August 18, 2003 – CDPHE approved the Building 776/777 Radiological Pre-Demolition Survey Plan.
- September 2003 - Completed Set 66 (Advanced Size Reduction Facility), and completed draining and removing the remaining equipment subject to the Mixed Residue Consent Order.
- September 26, 2003 - CDPHE approved the Pre-Demolition Survey Report (PDSR) for Buildings 710 and 781. This PDSR confirmed that these buildings are Type 1 facilities.
- September 30, 2003 - CDPHE approved the Project Specific Non-Radiological Characterization Plan for Building 776/777, which addressed characterization prior to demolition.
- December 2003 – Completed Set 69 (RCRA process waste T-Tanks).
- December 2003 - Liquid and sludge were pumped out of Building 730 pit, Tank T9 east and T9 west into holding tanks, and all concrete surfaces inside the tanks were painted. Electrical and mechanical equipment was stripped out of the vault above the tanks, and this area was also encapsulated. This completed stabilization of Building 730 in preparation for transfer to ER.
- January 2004 - Transite wall panel removal/replacement was begun for asbestos abatement purposes. Approximately 60% of the exterior walls were constructed of two layers of transite panels. These were removed as part of the asbestos abatement effort prior to demolition, and were replaced with non-asbestos panels.
- June 2004 - Completed decontamination of the B776/777 main plenum (PL-250). Also completed asbestos abatement of the exterior transite panels.
- June 11, 2004 – Closeout of mixed residue compliance order on consent was approved by CDPHE following removal of final mixed residue piping system from Building 776.

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- September 2004 - Completed decontamination, final surveys and encapsulation in Areas I, II and III (north, east and central portions of B777). Completed the removal of highly contaminated walls and floors from the Size Reduction Vault (SRV). Completed the demolition of B701 and B710. ER initiated demolition of the B730 under-ground storage tank north of B776.
- December 2004 - Construction began on the B776 water retention basin to be used for collection of contaminated dust suppression water and precipitation during demolition.
- December 2004 - ER completed demolition of the B730 under-ground storage tank north of B776 and remediation of the carbon tetrachloride source.
- January 26, 2005 - The final RCRA secondary containment area (room 131) was closed as documented in a Contact Record with CDPHE.
- February 2005 - Completed removal of highly contaminated floors in portions of Rooms 118, 134W, 134E, and 154. Demolished many interior non-load-bearing cinderblock walls to aid with dust control during demolition. (Rubble remained to be loaded out with building.) Completed core-boring vault walls and some buried equipment pits and placed expanding grout to fracture concrete. Completed decontamination, final surveys, and encapsulation in the remaining survey units.
- February 25, 2005 - CDPHE approved final B776/777 PDS Summary Report and gave approval for initiation of demolition
- March 2, 2005 - Demolition of B777 annex began.
- March 4, 2005 - Demolition of contaminated portion of B776/777 began.
- May 5, 2005 - Demolition of above-grade portions of B776/777 was completed.
- June 17, 2005 - Mobile water treatment system began treatment of 776 retention basin water.
- June 23, 2005 - Demolition of below-grade portions of B776/777 was completed. Two large metal pieces from buried equipment pit D were hoisted into rail cars.
- June 27, 2005 - Demolition area was downposted from a Contamination Area (CA) to a Soil Contamination Area (SCA).

3.0 Project Documentation

This section describes the documentation that was prepared to satisfy the requirements in the Rocky Flats Cleanup Agreement (RFCA) for decommissioning the Building 776/777 cluster. Documentation that was submitted as part of this project is referenced; a copy of the AR index for this project is included as Appendix A of this report.

3.1 DOP Modifications

As previously stated, the Building 776/777 DOP was approved by CDPHE on November 5, 1999. There were eleven minor modifications and one major modification made to the DOP:

DOP Modification #1 was approved by CDHPE on December 15, 1999. The modification included unit specific closure information for the RCRA Units located in set 62 (i.e., the interim status Fluidized Bed Incinerator [FBI] Oil Storage Tanks T-1 and T-2).

DOP Modification #2 was approved by CDPHE on February 24, 2000. The modification included addition of an agreement that partial closure of a RCRA-regulated unit may be conducted prior to the submittal of the unit-specific closure information required by Section 4.5.2 of the DOP, provided approval is received from the LRA and the agreement is documented via a Contact Record.

DOP Modification #3 was approved by CDPHE on March 3, 2000. The modification included unit specific closure information for RCRA Units located in sets 7, 11, 26, and 61. Sets 7, 11, and 26 contained mixed residue tanks and ancillary equipment, and set 61 contained two interim status tanks associated with the pilot FBI.

DOP Modification #4 was approved by CDPHE on May 23, 2000. The modification included requirements for the management of remediation waste. Prior to approval of this modification, hazardous remediation waste was managed in full compliance with RCRA requirements. This modification allowed managing this waste under CERCLA, in compliance with the substantive portions of RCRA requirements. The Operations Order for Management of Remediation Waste, OO-776-374, was referenced and a copy was provided.

DOP Modification #5 was approved by CDPHE on September 13, 2000. The modification included:

- Unit specific closure information for the RCRA Units located in set 55 (three mixed residue tanks).
- Updates to Table 6, RCRA-Regulated Units, to add newly permitted RCRA container storage units to the DOP.

DOP Modification #6 was approved by CDPHE on February 22, 2001. The modification included:

- Unit specific closure information for the RCRA Units located in sets 4, 5, 6, 10, 11, 18, 21, 22, 27, 29, 34, 35, 36, and 52. Set 27 contained a RCRA permitted container storage unit, and the other sets all contained mixed residue tanks and ancillary equipment. (Modification #4 also included closure information for another mixed residue tank in Set 11.)
- Updates to Table 6, RCRA-Regulated Units, to add a newly discovered mixed residue tank in set 11. Closure information for this tank was also included in this modification under Set 11.

DOP Modification #7 was approved by CDPHE on June 27, 2001. The modification included:

- Update to section 4.5.2 regarding RCRA closure documentation. This section was modified to allow units being clean closed through documenting absence of contamination to be documented via a letter to the LRA instead of a minor DOP modification for submittal of unit specific closure information.
- Update to Section 6.3 regarding treatment of remediation waste prior to offsite disposal. This section was modified to allow treatment in accordance with the Operations Order for Management of Remediation Waste, OO-776-374, provided with DOP Modification #4.

DOP Modification #8 was approved by CDPHE on May 1, 2002. The modification included:

- RCRA unit specific closure information for the size reduction vault (Set 60), the pilot and production FBIs (sets 61 and 63), the supercompactor (set 64), the advanced size reduction facility (Set 66), the process waste tanks (set 69) and the overhead RCRA piping (set 78).
- Revised unit specific closure information sheets for sets 4, 6, 29, 35, and 36 to document changes previously approved via Regulatory Contact Records.
- Addition of the Inner Tent Dismantlement Chamber (ITDC) to Set 83.
- Correction of typographical errors and incorrect references.

DOP Modification #9 was approved by CDPHE on October 1, 2002. The modification included submittal of RCRA unit specific closure information for Set 82, which included all concrete secondary containment areas that provided containment for RCRA tank systems, container storage units, and treatment units throughout the building. This was the final closure plan submittal for the Building 776/777 DOP.

DOP Modification #10 was approved by CDPHE on June 10, 2003. The modification included administrative changes, and accompanied the major DOP modification to include the demolition plan for Building 776/777 as Appendix I. All references in the DOP to a future modification for the demolition plan were replaced by references to Appendix I. The modification also provided an updated list of Applicable or Relevant and Appropriate Requirements (ARARs) in Appendix F, to be consistent with the latest RFCA Implementation Guidance Document (IGD).

The major DOP modification for the Demolition Plan was approved by CDPHE on July 1, 2003. The DOP was reissued as Revision 1, to include both minor modification #10 and the major modification for the addition of the Demolition Plan as Appendix I. Appendix J was added to include the Comment Response Summary for the Demolition Plan.

DOP Modification #11 was approved by CDPHE on August 12, 2004. The modification included retyping Building 701 from a Type 1 to a Type 2 facility and including Building 701 in the scope of the DOP.

Table 1 summarizes the project documentation for this phase of the project.

Table 1 776/777 Closure Project DOP Modification Documentation

Document	Date	AR Document Number
DOP Modification #1 submittal to CDPHE	December 9, 1999	B776-A-000020
DOP Modification #1 approval by CDPHE	December 15, 1999	B776-A-000021
DOP Modification #2 submittal to DOE	February 7, 2000	B776-A-000045
DOP Modification #2 approval by CDPHE	February 24, 2000	B776-A-000034, 44
DOP Modification #3 submittal to CDPHE	March 1, 2000	B776-A-000035
DOP Modification #3 approval by CDPHE	March 3, 2000	B776-A-000031
DOP Modification #4 submittal to CDPHE	May 17, 2000	B776-A-000036
DOP Modification #4 approval by CDPHE	May 23, 2000	B776-A-000037
DOP Modification #5 submittal to CDPHE	September 11, 2000	B776-A-000042, 49
DOP Modification #5 approval by CDPHE	September 13, 2000	B776-A-000043, 47

DOP Modification #6 submittal to CDPHE	February 13, 2001	B776-A-000053, 54
DOP Modification #6 approval by CDPHE	February 22, 2001	B776-A-000055
DOP Modification #7 submittal to CDPHE	June 7, 2001	B776-A-000063
DOP Modification #7 approval by CDPHE	June 27, 2001	B776-A-000066
DOP Modification #8 submittal to DOE	April 4, 2002	B776-A-000086
DOP Modification #8 approval by CDPHE	May 1, 2002	B776-A-000091
DOP Modification #9 submittal to DOE	September 5, 2002	B776-A-000109
DOP Modification #9 approval by CDPHE	October 1, 2002	B776-A-000110
DOP Modification #10 submittal to DOE	May 30, 2003	B776-A-000142
DOP Modification #10 approval by CDPHE	June 10, 2003	B776-A-000144
DOP Major Modification submittal to CDPHE	June 27, 2003	B776-A-000148
DOP Major Modification approval by CDPHE	July 1, 2003	B776-A-000278
DOP Modification #11 submittal to DOE	July 20, 2004	B776-A-000199
DOP Modification #11 approval by CDPHE	August 12, 2004	B776-A-000206

3.2 Building Characterization

Facilities within the 776/777 closure project were characterized using a three-step approach: reconnaissance level characterization (RLC), in-process characterization, and pre-demolition survey (PDS).

3.2.1 Reconnaissance Level Characterization

The purpose of the RLC is to provide an initial assessment of the contamination, hazards, and other conditions associated with a facility. The Building 776/777 Closure Project RLCR was completed on August 28, 1998. The RLC was conducted prior to approval of the RFETS Decontamination and Decommissioning Characterization Protocol (DDCP). The methodology used for the RLC was described in detail in the RLCR.

The facilities were classified pursuant to the RFETS Decommissioning Program Plan (DPP). The initial typing indicated that Building 776/777 was a Type 3 facility, Building 730 was a Type 2 facility, and the remaining buildings in the cluster were considered Type 1 facilities. The RLCR for Building 776/777 was approved by CDPHE on August 28, 1998. Surveys conducted in June 2004 indicated that Building 701 should be re-typed to a Type 2 facility due to radiological contamination. This change was documented in DOP Modification #11.

3.2.2 In Process Characterization

Additional radiological and chemical characterization was conducted during decommissioning, as facility components were removed and building surfaces exposed. This type of characterization is referred to as in-process characterization. Data from in-process characterization was used to identify additional hazards; refine approaches to component

removal, size reduction, and decontamination; revise waste volume estimates; and modify environmental, safety and health controls, as necessary (e.g., asbestos and beryllium characterization.) In-process characterization was also conducted to verify that decontamination activities achieved the applicable performance specifications, such as release or reuse criteria and waste acceptance criteria (WAC) of the receiving disposal facility. All laboratory analytical data has been archived through Kaiser-Hill Analytical Services Division.

3.2.3 Pre-Demolition Survey

For Building 776/777, the pre-demolition survey was performed in accordance with the approved *Radiological Pre-Demolition Survey Plan* dated August 8, 2003 and with the *Project-Specific Non-Radiological Characterization Plan for Building 776/777* dated September 16, 2003. For other facilities within the 776 project, final radiological surveys were conducted in accordance with the site Pre-Demolition Survey Plan (PDSP) prior to demolition. The results of these surveys demonstrated that Buildings 702, 703, 710, 712, 712A, 713, and 713A met the unrestricted release limits specified in the PDSP prior to demolition. These facilities were all managed as sanitary waste for disposal. Part of Building 701 did not meet unrestricted release, and this portion was managed as low level waste. All of Building 730 was managed as low level waste. The Building 777 annex met unrestricted release levels and was managed as sanitary waste, with the remainder of Building 776/777 managed as low level waste. As previously stated, although Building 781 met unrestricted release levels, it was managed as low level waste due to its small volume and location below ground immediately adjacent to Building 777.

The PDSRs included information on chemical contamination as well as radiological. Hazardous substances and wastes were removed from all buildings prior to demolition (with two exceptions noted below) and all RCRA units were appropriately closed. RCRA unit closures are summarized in Appendix B. Asbestos abatement was also completed prior to demolition in accordance with Colorado Air Quality Control Commission (CAQCC) Regulation No. 8, as certified in the Demolition Notification submitted to CDPHE. Beryllium surveys demonstrated that the buildings met the unrestricted release levels. Two instances were documented where hazardous constituents were not removed prior to demolition:

1. The Building 777 annex had a non-friable skim-coat of asbestos over the concrete block walls.
2. A 6,000 pound lead collar in the wall of room 430 was too large to remove prior to demolition, so permission was received to remove it during demolition and manage as low level mixed waste.

4.0 Waste Disposition

The 776/777 Closure Project generated the following waste types: sanitary, non-hazardous non-radioactive, hazardous, low level, low level mixed, TSCA, low level TSCA, transuranic (TRU), and transuranic mixed. Table 2 documents the quantity and disposal sites for these waste types and materials for all the buildings in the 776/777 cluster. Wastes generated from November 1999 when the 776/777 DOP was approved until June 2005 at the completion of demolition are included in these waste totals. A small percentage of the low level waste totals shown below

include soil from B-Pond, Building 776/777 ER soil remediation, and Building 559 ER soil remediation that was co-loaded with Building 776/777 demolition debris in gondola rail cars.

Table 2 776/777 Closure Project Waste Stream Disposition Summary

1. Sanitary Waste	
Disposal Sites:	Front Range Landfill, BFI Tower Road Landfill, BFI Foothills Landfill
Projected amount (m ³):	819
Actual amount (m ³):	4,748
2. Non-Hazardous, Non-Radioactive Waste	
Disposal Sites:	Onyx, Henderson, CO; Trade Waste Incineration, Sauget, IL; Safety-Kleen, Inc.
Projected volume (m ³):	-
Actual volume (m ³):	19.0
Additional Information:	Oils, lab pack chemicals, brine, batteries
3. Hazardous Waste	
Disposal Sites:	Chemical Waste Management, Henderson, CO; Chemical Waste Management, Kettleman Hills, CA; Onyx, Henderson, CO; Trade Waste Incineration, Sauget, IL; Superior Special Services.
Projected volume (m ³):	44
Actual volume (m ³):	5.8
4. Low Level Waste	
Disposal Sites:	Nevada Test Site, Envirocare of Utah, Diversified Scientific Services, Inc., Kingston, TN.
Projected volume (m ³):	9,473
Actual volume (m ³):	61,992
5. Low Level Mixed Waste	
Disposal Sites:	Envirocare of Utah; Materials and Energy Corp., Oak Ridge, TN; Pacific Ecosolutions, L.L.C., Richland, WA; Waste Control Specialists, Andrews, TX; Perma-Fix, Gainesville, FL
Projected volume (m ³):	506
Actual volume (m ³):	571.6
6. TSCA (PCBs)	
Disposal Sites:	Onyx, Henderson, CO; Safety-Kleen, Inc.
Projected volume (m ³):	1
Actual volume (m ³):	0.96
7. Low Level TSCA	
Disposal Sites:	Materials and Energy Corp., Oak Ridge, TN
Projected volume (m ³):	1
Actual volume (m ³):	0.6
8. TRU Waste	
Disposal Sites:	WIPP
Projected volume (m ³):	2,264
Actual volume (m ³):	645.3
9. TRU Mixed Waste	
Disposal Sites:	WIPP
Projected volume (m ³):	525
Actual volume (m ³):	125

5.0 Site Reclamation

All buildings in the 776/777 Closure Project were removed to at least three feet below final grade. Removal to this depth included removal of all building floor slabs. Building 776/777, 701, 702, 703, 710, 712, 712A, 713, 713A, and 781 structures were removed, including all slabs, basements, footers, and foundations.

Underground process waste lines beneath the Building 776/777 slab were completely removed. Removed and remaining original process waste lines outside the building footprint are shown on Figure 4, along with storm drains, sewer and water lines.

Underground utility lines (e.g., alarms, electrical, natural gas, nitrogen, water, etc.) were removed to at least three feet below final grade beneath the building footprints. Utilities outside the building footprints were air gapped, plugged, or otherwise isolated. Figure 6 shows the Building 776/777 Project Utility Isolations and depths below the surface. These depths relate to the existing ground surface at the time of isolation.

The only remaining building structures within the 776/777 Closure Project were some footers and foundations below three feet of final grade associated with buildings 776/777. Final site contouring in this sector had not been completed at the time this report was prepared. However, final grading will be as shown on Figure 7.

Environmental Restoration activities conducted outside the scope of the 776/777 Closure Project DOP (e.g., under the ER RSOP) are summarized in a separate ER closeout report (Closeout Report for IHSS Group 700-3, Volume I, dated May 2005. Volume II will address UBCs 776, 777 and 778, and OPWL Tank 18).

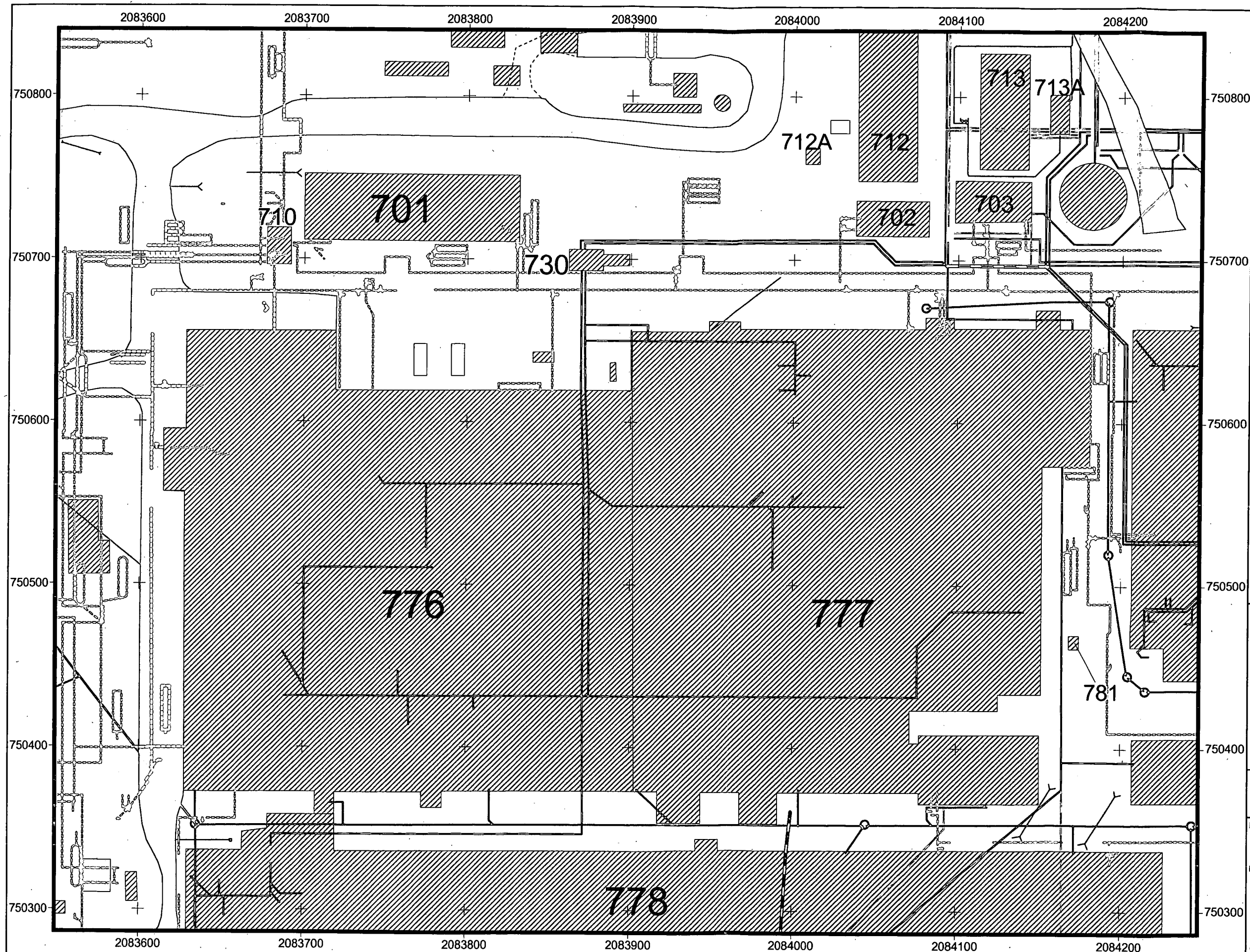
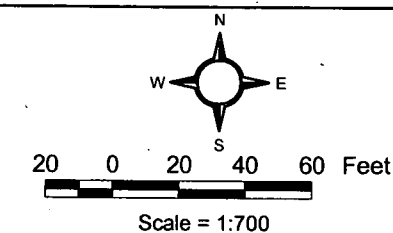


Figure 4
Building 776/777
Components Removed
and Remaining

Key

- OPWL left in place
- OPWL does not exist
- OPWL removed
- Sewer drain left in place
- Water line
- Removed water line
- Storm drain left in place
- Storm drain removed

- Standing
- Demolished structure
- Paved area
- Dirt road



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:



File: W:\Projects\FY2005\700-3\env_compl_map_rev_090605.apr

Date: 09/06/05

Figure 5 Building 776/777 Project Utility Isolations

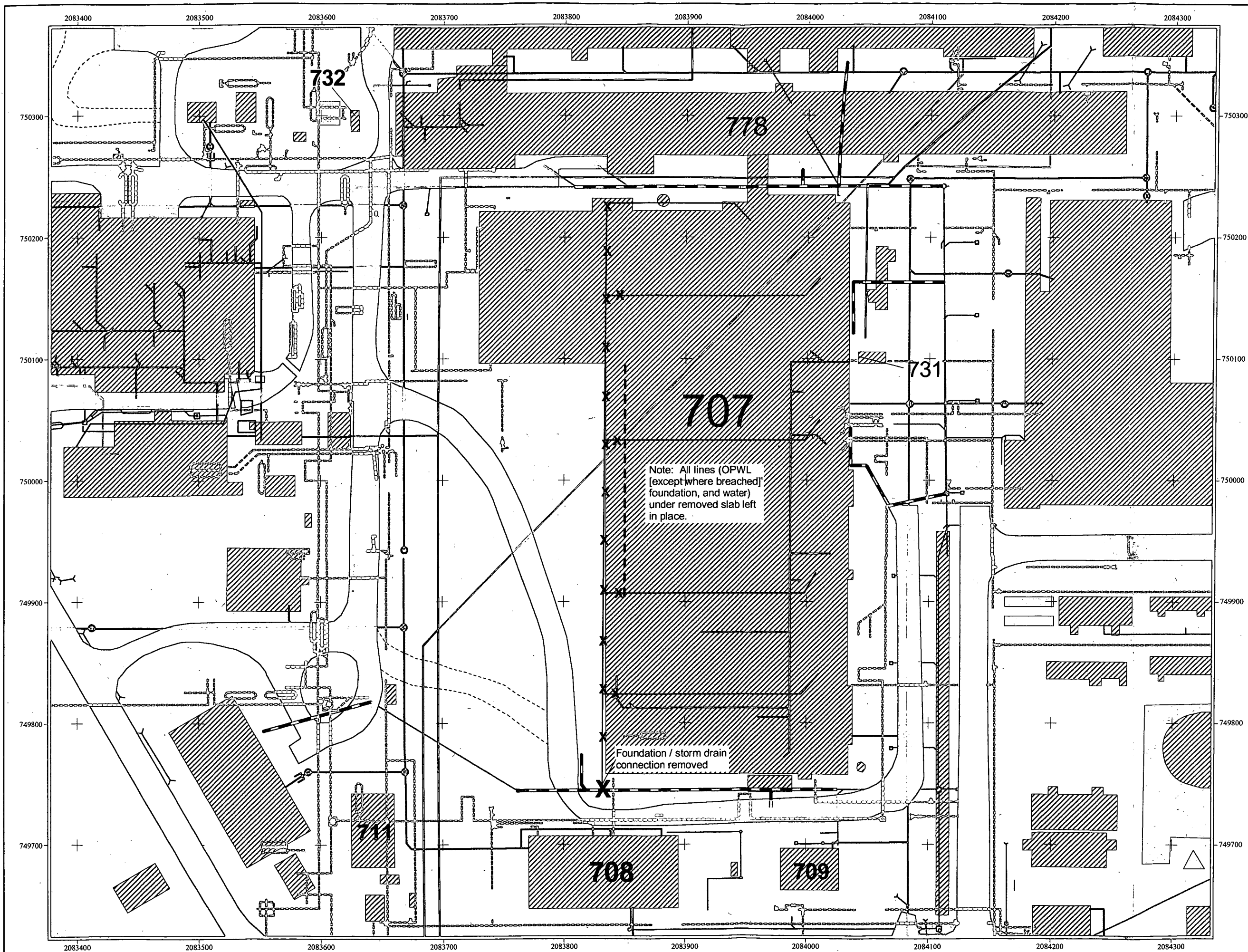


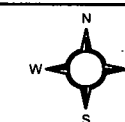
Figure 5

**IHSS Group 700-2
Components Removed
and Remaining**

KEY

- X** Line/pipe disruption
- OPWL left in place
- OPWL does not exist
- OPWL removed
- Foundation drain left in place (western line disrupted approx. every 40 ft)
- Coolant oil line left in place
- Coolant oil line removed
- Sewer drain left in place
- Water line left in place
- Storm drain left in place
- Storm drain removed

- Structure
- Demolished structure
- Paved area
- Dirt road



25 0 25 50 75 Feet

Scale = 1 : 900

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:



Figure 7 700 Area Final Grading

Appendix A Administrative Record Index for 776/777 Closure Project

Appendix B RCRA Closure Summary for 776/777 Closure Project

Building 776/777 Closures

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
37	Low-Level Mixed Waste Baler	Existed, but never used; not subject to RCRA regulation	WITHDRAWN 4/12/95 (ref. 95-DOE-09335).	NA
44.01	Fluidized Bed Incinerator Oil Storage Tank T-2 (FBI-2)	Interim status unit - No longer subject to RCRA regulation	Closed by removal in accordance with the B776/777 DOP, set 62, on 1/29/00; packaged as LLM SCO in cargo container X17321. Secondary containment in Rm 134 west closed under the DOP, Set 82; CDPHE approval documented in Contact Record dated 11/23/04, contingent on management of concrete as LLW (AR Ref. B776-A-000226).	Tank 1/29/00 Containmt. 11/23/04
44.02	Fluidized Bed Incinerator Oil Storage Tank T-1 (FBI-1)	Interim status unit - No longer subject to RCRA regulation	Closed by removal in accordance with the B776/777 DOP, set 62, on 1/29/00; packaged as LLM SCO in cargo container X17321. Secondary containment in Rm 134 west closed under the DOP, Set 82; CDPHE approval documented in Contact Record dated 11/23/04, contingent on management of concrete as LLW (AR Ref. B776-A-000226).	Tank 1/29/00 Containmt. 11/23/04
49.01	Fluidized Bed Incinerator Unit (Production) Rm. 118	Interim status unit - No longer subject to RCRA regulation	Closed by removal in accordance with the 776/777 DOP, set 63, on 9/30/02. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 07/28/04 contingent on management of concrete as LLW (AR Ref. B776-A-000200).	FBI - 9/30/2002 containmt - 7/28/04
49.02	Fluidized Bed Incinerator Unit (Pilot) Rm. 135	Interim status unit - No longer subject to RCRA regulation	Closed by removal in accordance with the B776/777 DOP, set 61, on 9/30/02. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 07/28/04 contingent on management of concrete as LLW (AR Ref. B776-A-000200).	FBI - 9/30/2002 containmt - 7/28/04
49.02	Fluidized Bed Incinerator Unit (Pilot), Tanks T-1 and T-2	Interim status unit - No longer subject to RCRA regulation	Closed by removal in accordance with the B776/777 DOP Set 61, and Compliance Order on Consent #00-02-25-01, (3/29/00); packaged as LLM SCO in cargo container X19504. Secondary containment in Rm 154 closed under the DOP, set 82; CDPHE approval documented in contact record dated 12/16/04 contingent on management of concrete as LLW (AR Ref. B776-A-000231).	Tanks 3/29/00 Containmt. 12/16/04
52	Oil/Water	Not subject to RCRA	WITHDRAWN 11/13/92.	NA

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
	Separator	regulation		
61	Size Reduction Vault (Container Storage)	Interim status unit - No longer subject to RCRA regulation	Closed using debris treatment (hydrolasing) in accordance with the B776/777 DOP, Set 82, in May 2004.	05/31/04
61	Size Reduction Vault (Miscellaneous Treatment Unit)	Interim status unit - No longer subject to RCRA regulation	Closed by removal in accordance with the B776/777 DOP, set 60.	9/30/02
74	Supercompaction and Repackaging Facility (SARF)	Interim status unit - No longer subject to RCRA regulation	Closed in accordance with the 776/777 DOP, set 64, using the debris rule in May 2002 and packaged as LLW.	5/15/02
75	TRU Waste Shredder	Never installed; never subject to RCRA regulation	Withdrawn	NA
90.108	Container Storage, Glove box in Rm. 154A	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 2/21/95 (ref. 95-DOE-09213).	NA
90.52	Container Storage, Dock 6	Loading docks are excluded from permitting; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453)	NA
90.85	Container Storage, Rm. 152	Mixed Residue Container Storage Vault	Secondary containment in Rm 152 closed under the DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218). Permission received from CDPHE to remove shelving without a minor modification to the DOP 6/20/00.	11/15/04
90.99	Container Storage, Rm. 127 Basement	Mixed Residue Container Storage Unit	Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 7/28/04 contingent on management of concrete as LLW (AR Ref. B776-A-000200).	7/28/04
94.001 94.002 94.003	Tank SR-3 Tank SR-4 Tank SR-5, Rm. 154	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks and some ancillary equipment closed by removal in January 2001 in accordance with the B776/777 DOP, set 55, and packaged as TRU waste. Remaining ancillary piping was closed by removal in June 2002 in accordance with B776/777 DOP, set 78. Secondary containment in Rm 154 closed under the DOP, set 82; CDPHE approval documented in contact record dated 12/16/04 contingent on management of concrete as LLW (AR Ref. B776-A-000231).	Tanks - 1/25/01 piping- 7/2/02 containmt. 12/16/04

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
94.004	Tank T-1, Rm. 134	Never used for the storage of hazardous waste; never subject to RCRA regulation	Formerly part of the Supercompactor; tank has been removed.	NA
94.005	Tank T-344, Rm. 134	Mixed Residue Tank; no longer subject to RCRA regulation	Closed by removal in November 2002 in accordance with 776/777 DOP, set 66. Secondary containment was provided by a stainless steel catch pan that was closed under the debris rule at the time the tanks were closed.	11/7/02
94.006	Tank T-345, Rm. 134	Mixed Residue Tank; no longer subject to RCRA regulation	Closed by removal in October 2002 in accordance with 776/777 DOP, set 66. Secondary containment was provided by a stainless steel catch pan that was closed under the debris rule at the time the tanks were closed.	10/25/02
94.007 94.008	Tank T-360 Tank T-370, Rm. 134	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks and some ancillary equipment closed by removal in March 2001 in accordance with the B776/777 DOP, set 52. The tanks and ancillary piping were packaged as LLM waste in cargo container X19537. Filter Glove boxes 361 and 371 and the secondary containment metal berm were treated under the debris rule to a clean debris surface and closed by removal as LLW. Remaining ancillary piping removed in November 2003 under set 78 and packaged as LLM. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 7/28/04 contingent on management of concrete as LLW (AR Ref. B776-A-000200).	Tanks- 3/15/2001 piping- 11/2003 containmt. 7 /28/04
94.009 94.010 94.011	Ball Mill Washer Collection Pan Annular Tank, Rm. 146	Mixed Residue Tanks; no longer subject to RCRA regulation	Closed by removal and managed as non-hazardous waste in accordance with B776/777 DOP, set 60.	9/30/02
776.1	Container Storage, Rm. 127 (Prev. Unit 90.66)	RCRA Permit; no longer subject to RCRA regulation	Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 7/28/04 contingent on management of concrete as LLW (AR Ref. B776-A-000200).	7/28/04
776.1	Container Storage, Rm. 208 (prev. Unit 27)	RCRA Permit; no longer subject to RCRA regulation	Permission received to remove metal berms under "debris rule" closure without a minor modification to the DOP 10/25/00. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 11/24/04 contingent on management of concrete as LLW (AR Ref. B776-A-	11/24/04

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
			000225).	
776.1	Container Storage, Rm. 237 (prev. Unit 12)	RCRA Permit; no longer subject to RCRA regulation	Permission received to remove metal berms under "debris rule" closure without a minor modification to the DOP 10/25/00. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218).	11/15/04
776.1	Container Storage, Rm. 134 (prev. Unit 11)	RCRA Permit; no longer subject to RCRA regulation	Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact records dated 7/28/04 (south half of Rm 134 by ASRF, AR Ref. B776-A-000200) and 11/23/04 (north half by SRV, AR Ref. B776-A-000226) contingent on management of concrete as LLW.	South half by ASRF - 7/28/04 North half by SRV - 11/23/04
776.1	Container Storage, Rm 154 (prev. Unit 69)	RCRA Permit; no longer subject to RCRA regulation	Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 12/16/04 contingent on management of concrete as LLW (AR Ref. B776-A-000231).	12/16/04
776.1	Container Storage, Rm. 159	RCRA Permit; no longer subject to RCRA regulation	Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218).	11/15/04
776.3	Advanced Size Reduction Facility, Rm. 134 (Prev. Unit 62)	RCRA Permit; no longer subject to RCRA regulation	GBs J-176, J-177, J-270, and J-341 treated under debris rule and closed by removal, October 2002. GBs J-340, J-357 treated under debris rule and closed by removal in December 2002. The stainless steel floor was cleaned and closed under the debris rule in March 2003.	GBs - 10/31/2002 and 12/31/2002. Floor - March 31, 2003
776.2A 776.2B 776.2C 776.2D	Tank Storage, Tank T-1A (40.72) Tank T-1B (40.73) Tank T-2A (40.70) Tank T-2B (40.71) Room 127	RCRA Permit; no longer subject to RCRA regulation	Tanks closed by removal in accordance with the B776/777 DOP and managed as non-hazardous low level waste - ref. Contact record from Carolyn Hicks to James Hindman dated 12/9/03 (AR Ref. B776-A-00163). Secondary containment liner in tank berm closed by debris rule/removal in Dec. 03. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 7/28/04 contingent on management of concrete as LLW (AR Ref. B776-A-000200).	tanks - 12/15/03 containmt - 7/28/04
776.3	Mercury Amalgamation	RCRA Permit; no longer subject to RCRA	One time; 10/17/02 Contact Record btw C. Hicks and James Hindman that TRM	March, 312003

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
	under Unit 881.3B	regulation	mercury amalgamation will be conducted in the ASRF under procedure 00-707/776-009. ASRF has been closed by debris cleaning.	
S002	Oil Solidification Process	RCRA Permit; no longer subject to RCRA regulation	Bottled TRM oil was solidified in drums in Unit 776.1 Room 127, repack tent. Repack tent has been closed by removal.	Sept. 30, 2003
90.130	Container Storage, Rm. 449	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 2/21/95 (ref. 95-DOE-09213).	NA
90.133	Container Storage, Rm. 447	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 2/21/95 (ref. 95-DOE-09213).	NA
90.134	Container Storage, Glove box in Rm. 430	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
90.135	Container Storage, Glove box in Rm. 463	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
90.136	Container Storage, Glove box in Rm. 437	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 2/21/95 (ref. 95-DOE-09213).	NA
90.137	Container Storage, Glove box in Rm. 415	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
90.46	Container Storage, Dock 2 (Rm. 480)	Loading docks are excluded from permitting; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
90.47	Container Storage, Dock 3 (Rm. 479)	Loading docks are excluded from permitting; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
90.48	Container Storage, Rm. 465	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 2/21/95 (ref. 95-DOE-09213).	NA
90.49	Container Storage, Glove box in Rm. 131	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
90.49	Container Storage, Rm. 131	Mixed Residue Container Storage Unit,	Secondary containment closed under the DOP, set 82; CDPHE approval	1/26/05

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
		no longer subject to RCRA regulation	documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253). (See DOP Mod 9, 10/1/02)	
90.50	Container Storage, Rm. 432	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 2/21/95 (ref. 95-DOE-09213).	NA
90.88	Container Storage, Rm. 478 (B-Vault)	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453); used as an interim storage area for mixed residues (Unit 2501) from 12/17/98 through 9/25/00.	NA
90.89	Container Storage, Rm. 483A (C-Vault)	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
90.90	Container Storage, Rm. 416A Vault	Never used for hazardous waste; not subject to RCRA regulation	WITHDRAWN 10/26/94 (ref. 94-DOE-10453).	NA
95.001 95.002	Tank T-A1 Tank T-A2, Rm. 131	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks closed in accordance with the Mixed Residue Pencil Tank Closure Pilot Project #1 Closure Plan (9/26/95); Closure Certification signed 10/3/96 (ref. 96-DOE-03023, 11/12/96). Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253).	Tanks- 10/3/96 Containmt. 1/26/05
95.003 95.004 95.005	New Tank 1103 New Tank 1104 New Tank 1105, Rm. 131	Never installed; never subject to RCRA regulation	Withdrawn	NA
95.006	Tank 1103, Rm. 131	Mixed Residue Tank; no longer subject to RCRA regulation	Tank and some ancillary equipment closed by removal 8/7/00 in accordance with the B776/777 DOP set 7 and packaged as TRM waste in crates S00758, S00759, and S00780. Remaining ancillary piping was closed by removal in July 2002 in accordance with B776/777 DOP, set 78. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253).	Tank 8/7/00 piping 7/2/02 Containmt. 1/26/05
95.007	Tank 1104, Rm. 131	Mixed Residue Tank; no longer subject to RCRA regulation	Tank and some ancillary equipment closed by removal 7/26/00 in accordance with the B776/777 DOP set 7, packaged as TRM waste in crates S00676, S00692, and	Tank 7/26/00

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
			S00696. Remaining ancillary piping was closed by removal in July 2002 in accordance with B776/777 DOP, set 78. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253).	piping 7/2/02 Containmt. 1/26/05
95.008	Tank 1106, Rm. 131	Mixed Residue Tank; no longer subject to RCRA regulation	Tank and some ancillary equipment closed by removal 8/1/00 in accordance with the B776/777 DOP Set 7 and Compliance Order on Consent #00-02-25-01, packaged as TRM waste in crates S00778 and S00779. Remaining ancillary piping was closed by removal in July 2002 in accordance with B776/777 DOP, set 78. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253).	Tank 8/1/00 piping 7/2/02 Containmt. 1/26/05
95.009 95.010 95.011 95.012 95.013	Tank T-10 Tank T-11 Tank T-12 Tank T-5 Tank T-6 Rm. 134E	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks closed in accordance with the Mixed Residue Pencil Tank Closure Project #2 Closure Plan (5/29/97); Closure Certification signed 9/18/97 (ref. 97-DOE-05486, 9/30/97 and 97-DOE-05495, 10/15/97; it appears the same Closure Certification was transmitted to CDPHE twice). Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218).	Tanks 9/18/97 Containmt. 11/15/04
95.014	Tank T-7, Rm. 134E	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal in accordance with the B776/777 DOP Set 11, (4/4/00); packaged as TRM waste in drum DA8228. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218).	Tank 4/4/00 Containmt. 11/15/04
95.015	Holding Tank T-1, Rm. 430	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal 6/27/00 in accordance with the B776/777 DOP Set 26 and Compliance Order on Consent #00-02-25-01. Tank packaged as TRM waste in standard waste boxes S00684 and S00685. Filter Glove box FL-1 was cleaned under the debris rule and closed by removal as non-hazardous LLW. Piping closed by removal with set 78 in July 2002.	Tank 6/27/00 piping 7/2/02 Containmt. 6/17/04

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
			Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 6/17/04 contingent on management of concrete as LLW. . (AR Ref. No. B776-A-000190)	
95.016	Holding Tank T-2, Rm. 430	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal in accordance with the B776/777 DOP Set 26, (7/12/00); packaged as TRM waste in standard waste boxes S00677 and S00679. Piping closed by removal with set 78 in July 2002. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 6/17/04 contingent on management of concrete as LLW. . (AR Ref. No. B776-A-000190)	Tank 7/12/00 Piping 7/2/02 Containmt. 6/17/04
95.017 95.018	Tank T-3 Tank T-4 Rm. 430	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks closed in accordance with the Mixed Residue Pencil Tank Closure Pilot Project #1 Closure Plan (9/26/95); Closure Certification signed 10/3/96 (ref. 96-DOE-03023, 11/12/96). Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 6/17/04 contingent on management of concrete as LLW. . (AR Ref. No. B776-A-000190)	Tanks 10/3/96 Containmt. 6/17/04
95.019	Tank DL-776, Rm. 131	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal in accordance with the B776/777 DOP Set 4 in August 2002. Secondary containment closed under the DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253).	Tank -Aug 31,2002 Containmt. 1/26/05
777.1	Container Storage, Rm. 427	RCRA Permit; no longer subject to RCRA regulation	Closed. RCRA administrative closure request submitted to CDPHE 7/30/01 (01-DOE-01421). Room was clean closed by documenting the absence of contamination in accordance with Section 4.5.1.1 of the DOP.	7/30/01
777.1	Container Storage, Rm. 208, Area 10 (Prev. Unit 90.69)	RCRA Permit; no longer subject to RCRA regulation	Closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 11/24/04 contingent on management of concrete as LLW. . (AR Ref. No. B776-A-000227)	11/15/04
777.1	Container Storage, Rm. 416	RCRA Permit; no longer subject to RCRA regulation	Closed. RCRA administrative closure request submitted to CDPHE 7/30/01 (01-DOE-01421). Room was clean closed by documenting the absence of contamination in accordance with Section 4.5.1.1 of the DOP.	7/30/01

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
777.1	Container Storage, Rm. 416B	RCRA Permit; no longer subject to RCRA regulation	Closed. RCRA administrative closure request submitted to CDPHE 7/30/01 (01-DOE-01421). Room was clean closed by documenting the absence of contamination in accordance with Section 4.5.1.1 of the DOP.	7/30/01
777.1	Container Storage, Rm. 430, Area 2 (Prev. Unit 90.67)	RCRA Permit; no longer subject to RCRA regulation	Closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 6/17/04 contingent on management of concrete as LLW. (AR Ref. No. B776-A-000190)	6/17/04
777.1	Container Storage, Rm. 430, Area 3 (Prev. Unit 90.45)	RCRA Permit; no longer subject to RCRA regulation	Closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 6/17/04 contingent on management of concrete as LLW. (AR Ref. No. B776-A-000190)	6/17/04
777.1	Container Storage, Rm. 432C (Prev. Unit 17)	RCRA Permit; no longer subject to RCRA regulation	Closed under debris rule 12/17/03 (stainless steel floor). Documented in work package T0098393-2334 and Contact Record dated 6/24/04 regarding disposition of Survey Units 16 and 40.	12/17/03
777.1	Container Storage, Rm. 433 (Prev. Unit 90.132)	RCRA Permit; no longer subject to RCRA regulation	Closed. RCRA administrative closure request submitted to CDPHE 7/30/01 (01-DOE-01421). Room was clean closed by documenting the absence of contamination in accordance with Section 4.5.1.1 of the DOP.	7/30/01
777.1	Container Storage, Rm. 442 (Prev. Unit 90.131)	RCRA Permit; no longer subject to RCRA regulation	Closed. RCRA administrative closure request submitted to CDPHE 7/30/01 (01-DOE-01421). Room was clean closed by documenting the absence of contamination in accordance with Section 4.5.1.1 of the DOP.	7/30/01
777.1	Container Storage, Rm. 462 (Prev. Unit 90.87)	RCRA Permit; no longer subject to RCRA regulation	Closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 2/4/04 contingent on management of concrete as LLW. (AR Ref. No. B776-A-000167)	2/4/04
777.1	Container Storage, Rm. 477	RCRA Permit; no longer subject to RCRA regulation	Closed. RCRA Administrative Closure for Unit 777.1 Room 477 approved by CDPHE by letter from Steven Gunderson to Joseph Legare (00172-RF-04) dated 04/02/04 (AR Ref. B776-A-00172).	4/2/04
777.1	Container Storage, Rm. 483, Area 8 (Prev. Unit 90.68)	RCRA Permit; no longer subject to RCRA regulation	Closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 2/4/04 contingent on management of concrete as LLW. (AR Ref. No. B776-A-000167)	2/4/04
777.1	Vault Container Storage, Rm. 443, (Prev. Unit	RCRA Permit; no longer subject to RCRA regulation	Closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 9/15/03 contingent on	09/15/03

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
	90.132)		management of concrete as LLW.	
777.1	Vault Container Storage, Rm. 448 (Non-Destructive Testing [NDT] Vault), (Prev. Unit 90.86)	RCRA Permit; no longer subject to RCRA regulation	Closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 9/15/03 contingent on management of concrete as LLW.	09/15/03
N/A N/A	Tank T-8 Tank T-9 Rm. 134E	Mixed Residue Tanks; no longer subject to RCRA regulation	Closed in accordance with the Mixed Residue Pencil Tank Closure Project #2 Closure Plan (5/29/97); Closure Certification signed 9/18/97 (ref. 97-DOE-05486, 9/30/97 and 97-DOE-05495, 10/15/97; it appears the same Closure Certification was transmitted to CDPHE twice). Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218).	Tanks 9/18/97 Containmt 11/15/04
N/A	Tank V-022, Rm. 452	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal in accordance with the B776/ 777 DOP, set 34, on 4/4/01; packaged as TRM waste. Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 2/4/04 contingent on management of concrete as LLW. . (AR Ref. No. B776-A-000167)	Tank - 4/4/01 Containmt. 2/4/04
N/A	Tank V-543, Rm. 452	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal in accordance with the B776/ 777 DOP, set 36, in January 2002; packaged as TRM waste. Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 2/4/04 contingent on management of concrete as LLW. . (AR Ref. No. B776-A-000167)	Tank - 01/31/02 Containmt. 2/4/04
N/A	Tank V-605, Rm. 131	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal in accordance with the B776/ 777 DOP, set 4, in July 2002; packaged as TRM waste. Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253).	Tank - 07/31/02 Containmt. 1/26/05
N/A N/A N/A N/A	Tank V-614 Tank V-616 Tank V-618 Tank V-620 Rm. 131	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks closed by removal in accordance with the B776/ 777 DOP, set 5, on 4/25/02; packaged as TRM waste. Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-	Tanks - 4/25/02 Containmt. 1/26/05

RCRA Unit No.	Unit Description	Regulatory Status	Closure Info	Closure Date
			000253).	
N/A N/A	Tank V-626 Tank V-627 Rm. 131	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks closed by removal in accordance with the B776/ 777 DOP, set 6, on 8/21/01; packaged as TRM waste. Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 1/26/05 contingent on management of concrete as LLW (AR Ref. B776-A-000253).	Tanks - 8/21/01 Containmt. 1/26/05
N/A N/A N/A N/A N/A	Tank V-746 Tank V-747 Tank V-747A Tank V-748 Tank V-749 Rm. 134E	Mixed Residue Tanks; no longer subject to RCRA regulation	Tanks closed by removal in accordance with the B776/ 777 DOP, set 11, on 2/3/02; packaged as TRM waste. Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218).	Tanks - 2/3/02 Containmt. 11/15/04
N/A	Tank V-752, Rm. 134E	Mixed Residue Tank; no longer subject to RCRA regulation	Tank closed by removal in accordance with the B776/ 777 DOP, set 10, on 11/15/01; packaged as TRM waste. Secondary containment closed under the B776/777 DOP, set 82; CDPHE approval documented in contact record dated 11/15/04 contingent on management of concrete as LLW (AR Ref. B776-A-000218).	Tank - 11/15/01 Containmt. 11/15/04

Appendix C Contact Records